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ABSTRACT

A combined qualitative/quantitative methodology was employed to explore the interplay between the development of 16 German families and their individual members. Describing the dual approach, discussion concerns (1) the development of an appropriate framework for focusing observations; (2) the introduction of the concept of "family task" as a tool enabling the interpretation of everyday interaction in a family; (3) the quantitative analysis of changes in family interaction; and (4) a quantitatively enriched interpretation of a single case. A total of 2 years of monthly videotaped observations of interaction in family constellations among spouses with their 12- to 42-month-old first child and newborn second child identified normal constellations of interaction and a "deviant" pattern in one family. Analysis particularized the origin of the unique pattern of interaction in the mother's relationship with each of her children. Quantitative findings were subsequently used as background to guide qualitative case study analysis of interaction episodes in the deviant family. Methodological implications of the dual approach are pointed out. It is concluded that only the combination of the two approaches enabled the identification and understanding of certain aspects of family interaction. (RH)

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A DUAL METHODOLOGICAL APPROACH IN STUDYING CHILD AND FAMILY DEVELOPMENT: TASK DESCRIPTION AND QUANTIFICATION OF FAMILY INTERACTION EPISODES

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A DUAL METHODOLOGICAL APPROACH IN STUDYING CHILD AND FAMILY DEVELOPMENT: TASK DESCRIPTION AND QUANTIFICATION OF FAMILY INTERACTION EPISODES

Introduction

Scientists who were eager to learn more about nature's secrets and dared to use new ways of exploration, hoping that some of them could lead to new landscapes of knowledge, always exploited all kinds of methods that were available to them. The dealing with unknown phenomena is a twofold task: first, the objects under investigation must be characterized according to a number of basic categories, for example, the frequency of occurence, extension in space, movement in time, or other salient features; second, the exploration should also aim at the detection of those general rules or laws the new phenomena apparently follow. Whereas the first procedure was used mainly for exploring nature and founded natural sciences, the second procedure has its roots in the interpretation of texts (Dilthey 1900).

This method of finding a set of rules for explicating the unknown texts has been generalized and used for the exploration of human behavior. The procedure can best be described by a movement starting from the single case and a concrete phenomenon towards a set of general and abstract rules which help to define a general categorical frame and compare the phenomena to others. Thus, the finding of rules provides a new "look" at the object of interest and a kind of understanding of its "meaning", leading to a classification according to "typical and relevant features". The movement in this "cycle of interpretation" goes from the concrete to the abstract and back to the concrete level.

After this, there is a second cycle, again from the single phenomenon to the rules, but now taking the "explained" phenomen's specificity into account with the intention to enrich the validity of the rules.

Quantitative methods have been extensively used in the natural sciences for the

descriptions of external characteristics of objects in space and time as, for example, in the domain of physics. In sociology and psychology, the use of quantified information has its roots in the analysis of population statistics for finding out general characters or personalities, as did Quetelet in his "social physics" (1835). Already Durkheim, however, adopting the general method of using quantitative population data for his sociological analyses (as in "suicide" 1897), argued vehemently against an atheoretical use of statistical material; he claimed that without guiding hypotheses the available statistical data could not be interpreted properly. The specific merit of Durkheim's approach was the attempt - in contrast to Dilthey's argumentation - to combine both methods: after the act of hypothesis formation about social phenomena based on a global interpretation of various sources, the hypothesis was confronted with reality by using specific segments of the available statistical material.

Quantitative and qualitative methods in developmental psychology. In psychology, Wundt and Ebbinghaus tried to adopt procedures from the natural sciences by implementing experimental methods and quantification (e.g., of single isolated "reactions"), but at the same time they restricted the use of quantitative methodology to certain domains as to "psychophysics", keeping qualtitative methods for studying personalities or cultures, as in Wundt's "Voelkerpsychologie" (1913). Moving on to developmental psychology, quantification was a tool for describing changes of isolated characteristics such as intelligence, memory, and learning (Binet, & Simon 1905, Ebbinghaus 1885, Meumann 1920), whereas qualitative methods, i.e., interpretation of changes within the individual child, were used for a meticulous description of sensumotoric and language development (Stern 1914, Piaget 1923).

Stern's introducing of two different ways to study phenomena in psychology, the idiographical and nomothetical approach (1921), followed in a way Dilthey's initial

splitting between a "describing" and a "dissecting" psychology, but contrary to Dilthey, Stern's intention was to use both qualitative and quantitative methods for maximizing the proper study of human personality, be it the analysis of single personality traits as they occur in a population (nomothetical approach), or be it the description of the character of a single person (idiographic approach).

Regarding early studies in human development, direct observation and description as in the Scupins' "Bubi's erste Kindheit" (little boy's infancy) (1907), in William and Clara Stern's studies on language development of their own three children (1907), or in Jean Piaget's analyses of his own children's cognitive growth (1924), provided a broad empirical basis for interpretations and explications of human development. The choice of their methodological approach was no topic of discussion. Mostly, the frequencies of some isolated phenomena were reported (quantitative analysis), but relationships among phenomena or, even more complex, changes of those relationships, were presented as prototypes extracted from single case analyses.

Even in today's developmental research, both methods are used, as, for example, qualitative approaches mark the beginnings of both attachment research and human ethology, whereas in these domains today quantification of isolated behaviors seems to be the preferred method. Mary Ainsworth's (1967) first description after observing mother-child interaction in Uganda was a very tentative global interpretation with focus on qualitative analysis. It took a long time until a standardized experimental setting with 8 episodes was created allowing a kind of quantitative assessment of children's attachment behavior. Perhaps one of the most impressive descriptions of the interplay between qualitative and quantitative approach comes from a group of researchers who "detected" children as a kind of rare species in their environment: Human ethologists. Richards and Bernal (J. Dunn) (1972) wrote about their first approximation to the field of human development and

obseration of mother-child interaction:

"Our recording of categories grew out of our observations rather than being imposed on them by some pre-determined theortical position. At first we watched without making any attempt to record. Later we began to note features of behavior tat recurred regularly".

And C. Trevarthen (1977), another human ethologist, even more distinctly confessed: "I have avoided quantitative analyses until the patterns of actions became clear".

However, after a kind of "pattern" has been defined, the search begins to find out the relevant single cues that characterize the specific recurrent "patterns" sufficiently. The quantification of indicators that precisely depict the salient features becomes an intriguing venture for itself. Here an abstraction ("pattern") is tested against reality (observable behavior units).

The following contribution will center upon the delineation of a piece of research in which a kind of dual approach was used for exploring the interplay between individual and family development. First, everyday family interaction and its changes during a two year period after the arrival of a new child is conceptualized as the accomplishing of a series of "tasks", according to which families can be compared; second, the process of quantification of single aspects of family interaction is depicted; and third, as an example of enriched interpretation, using the dual approach, a case analysis of a single family with specific characteristics is presented.

Conception of an appropriate framework

Oberserving the stream of everyday interaction, the arrival of a child in a family initiates some changes in the family's extant relationship patterns. The mother is more involved in caretaking activities with the new child, the father may be forced to do more house chores than before, or, if there is another child in the

family, to share more time with this child.

Introduction of the task concept. The arrival of a child means a change in the extant relationship network in the family. The integration of the new child and the expansion of the family system can be taken as a kind of 'family task' (Duvall 1971) which not only offers a kind of tertium comparationis for various kinds of "unique" family interactions, but also opens the door for a new look at everyday interaction. The task concept renders a theoretical background for possible solutions under a selected perspective: The expansion of the triadic to the tetradic family leads to an increase of possible dyadic and triadic relationships inside the family, from three to six dyadic and from one to four triadic relationships (see fig.1). That is, the knowledge about possible constellations in a family provides a new framework for studying "recurring patterns" of interactions. For example, a family may frequently form M-C2 dyads with F and C1 remaining isolated after the second child's arrival or it may prefer to form M-C2-F triads with the first child staying alone. Another constellation may be found, in which the old triad M-F-C1 is maintained and the new child C2 is kept outside this relationship. These are all various possible solutions of a problem which is common to all families, a task that all families with a second child have to accomplish. Thus, the conception of task can offer some footholds for the interpretation of everyday interaction in a family which usually is taken as a much too complex and at first glance "unreadable" material.

Quantitative analysis of changes in family interaction

Sample and observational procedure. 16 families have been observed every month during a two year period. Each family had one child aged about 1 to 3 and a half years old, and a second child born at the beginning of the study. All families were observed when dealing with one or both children, and one half to one hour of videotape were taken at every observation. The arrival of the second child was

taken as a "natural" experiment, and the changes of family interaction that were registered were associated with necessary solutions of the expansion of the family system. The task of integrating the new infant into the extant system was selected as one problem according to which interactions in the family were compared.

Process of quantification. The video material that has been obtained by observing the families was partitioned into seven segments covering the two year period (6/8 weeks, 4/5 months, 8/9 months, 12/13 months, 16/17 months, 20/21 months, and 23/24 months), and two different single observations (lasting about 32 minutes each) from one period were combined, yielding the basis for quantification of family interaction in one of the seven periods. The videomaterial was split into episodes lasting between 20 to 40 seconds, and each episode was then scored according to a number of categories depicting family constellation, family dynamics, socialization activities, and family specific topics. Only analysis of family constellations will be reported here. For every family, 160 - 180 episodes represent one segment of the two year period. The family constellation was coded by a three digit number. The first digit indicates the number of persons present in the family (e.g. 1,2,3,4); the second digit stands for the depiction of the relationship among family members (e.g. no, dyadic, triadic, tetradic relationship); and the third digit finally specifies the famly members (e.g., a mother - child2 dyad with the first child and the father remaining separated). Frequencies of family constellations varying over time were interpreted as indicators of changes in family interaction formats, thus providing a time-specific frame for the assessment of typical constellations during the two year period.

Results: High frequencies of constellations containing mother-child2 interactions were found during the first 8 to 12 months as a mean trend in 10 families that have been analyzed so far over time (see figs. 2 and 3).

Looking at the single families' distribution of these specific constellations,

clearly one family, the MARK family, shows a deviant pattern which is most outstanding as to the constellation 427 (see fig 4). Whereas in all other families only a very moderate rate of this constellation has been found, the MARK family displays an extreme amount of this specific formation. As to the general trend analyses over time, this double dyadic formation 427 (M-C1, F-C2) shows a continuous course without a time-specific peak whereas the 428 constellation (M-C2, F-C1) exhibits a distinctive peak during the first 8 months. Thus, for a single case analysis, it would be interesting to look at the MARK family's interactions durng the first months, whether they are characterized by a high degree of mother-child1 constellations. The deviation of the MARK family becomes even more obvious, if one looks at other constellations with M-C1 or M-C2 dyads. Comparing 421 with 422, the high (and atypical) frequencies of M-C1 configurations in contrast to extremely low M-C2 frequencies is a starting point for interpreting the specific conditions under which the new child is being integrated into this family. In order to further elaborate this specificity, one can look for possible atypical frequencies of father-child constellations. The likening of 423 to 424 clarifies that the father's reationship to both children apparently does not deviate from other fathers' relationships to their first and second children. Thus, a specific relationship between M and her first child as well as between her and the second child can be assumed.

Enriched interpretation in a single case analysis

The result of the quantification process needs a reification by delineating what <u>really</u> is happening in the MARK family during the first months. A new cycle of a qualitative analyses of everyday interaction can now deepen our understanding of the specificity of the constellation pattern found by quantitative analysis. The knowledge about typical constellation patternss in this family can sharpen the eye

for perceiving "recurring patterns" of interaction and communication that else perhaps would be lost in the stream of everyday unstructured behavior and characterized as "noise".

Interpretation of everyday communication. As an example, the analysis of a couple of very short episodes, in which the MARK family prepares, conducts, and ends bathing ritual reveals a specific M-C2 and M-C1 communication (see appendix). The particular way, in which this family tries to resolve the integration task as it is manifest in the high amount of mother-child1 constellations after the birth of the second child, can be seen as being rather uncommon according to a 'general' expectation of introducing the new child.

Looking at the first episode (parents prepare both children for bath) at first glance the observer would perhaps be attracted by the fact, that the father is undressing the new baby and not the mother. This could be a very calculated action of compensation in order to give both the father the opportunity to be with the baby on the one hand and to let the mother renew her relationship with the first child on the other. In addition, the fact that a baby is crying when being undressed is very common. Why not go on to the next episode? What in this episode could be revealing for the specific and unusual family constellation we have found? Having a closer look at the way the mother is talking to the first child about the new baby, one notices that she refers to the baby in a rather unpersonal way ("she always cries"), suggesting that this behavior is in a way unchangeable, like a natural phenomenon; she even anticipates more crying after the bath and offers a tool to stop it (give the pacifier). If one attempts to "understand" the message which is sent by the mother to child1, it is obvious that the mother apparently in her conversation with the first child depicts the baby as a kind of disturbing intruder who often disrupts the relationship between her and her still "only" child. The father who is undressing the baby participates in the mother-child1 dialog, enlarging it to a

trialog. Although he actually is taking care of the new family member, he does not perceive her as a possible communication partner (he does not address the baby directly).

During the second episode, now in the bathroom, the mother holds the second child and talks to her directly. As the baby lies quietly in her arms, she addresses her as a child she expects to be difficult in the next moment. Even after a procedure which increased the probability of the baby feeling unconfortable (hairwash), the second child remains quiet. Mother, father and first child are apparently expecting her to cry and are commenting accordingly, reaffirming again their old 'triadic' constellation into which C2 is not integrated. Finally, as the second child is taken out of the tub, the mother gives the baby to the father and turns to the first child, now re-establishing the old mother-child1 dyad.

Methodological implications of this double approach. Summing up this enriched interpretation, two prerequisites for this procedure should be kept in mind: First, the introduction of a general concept of "family task" which served as a primary guideline for revealing particular realizations of the "integration task"; and second, the quantitative analysis of a number of general formats of family interaction which provided information about general trends and knowledge about the single family's specific location among other families.

As to quantitative analyses, the knowledge about an extreme position concerning a specific set of innerfamilial relationships (mother - child1 and mother - child2) offered guidelines for further studying exactly these relationships, especially at times in which they occur very frequently in other families. Using both the conceptual framework of 'family task' and the information about the family's specific frequencies in certain constellations, an intense investigation of the communication content with which relationships are maintained, renewed, or changed, could make visible finedrawn patterns of communication by which the general task of

integration is being accomplished here. In our example, the family apparently tries to keep the existing triadic formation mother-father-first child unchanged. This, of course, needs maneuvers to keep the new child out of bounds of the old triadic network. Under this persective, now the numerous negative comments of the mother with regard to the new baby can be interpreted as acts not caused by the mother's bad tantrum or her personality (she communicates very differently with her first child), but rather as a set of "meaningful" acts for avoiding the disruption of existing relationships. It seems as if the mother tries to maintain the relationship with her older daughter by impeding the establishment of a new relationship with the new child.

Conclusions

Making conclusions from the course of investigation as it has been presented in the example given, one might state that either the conception of an "integration task" after the arrival of a second child or the quantification procedure of selected aspects of family interaction alone would have been sufficient to gain information about some general trends entailing the possibility to find out the location of a single family within a given distribution of the whole sample. Adding a third aspect, one could even argue that the intense study of the MARK family's everyday interaction as a single case analysis without using a "task" concept and without any kind of quantification could perhaps have brought about a kind of consistent depiction of what might be the main features of this family, centering upon the problematic interaction the mother has with her second child during the first months.

Of course, comparing families according to their modes of accomplishing the integration task, analyzing single isolated aspects of family interaction formats, and, finally, describing meticulously a single case's specificities would lead to

bases of information from which some conclusions concerning specific apsects might be drawn. However, these single analyses miss an important feature of the dual approach which has been applied in this study, namely the movement between the different pieces of information: Neither had a purely qualitative analysis offered sufficient clues for detecting the families' specific locations in the distributions of complex constellations, nor could the intense focusing on specific relationships be justified. Thus, although "recurring patterns" of interaction can sometimes be found without any kind of quantitative analysis if they bear a certain amount of salient deviant features - as this is the case in pathological communications -, here, for the analysis of "normal" communication, the combination of qualitative and quanttative procedures seems to be a necessary prerequisite for being guided to find the set of rules which appears to govern a family's everyday communication.

Only the combination of the different approaches provided a growing understanding of interaction maeuvers as being expressions of a very complex interplay between the efforts of the "old" family members to keep an extant relational network untouched by a new member, and the efforts to accomplish the "integration task".

The detailed study of this kind of particular interplay may be considered as being able to shed more light on the development - in - context process. As this process has been conceptualized as a mutual adaptation entailing both continuity and change, more information is needed about the kind of influence the context is exerting on the individual and the degree of influence the individual child has for changing his or her context. The detailed and concept-guided description of a family integrating a new child can be taken as a step to a better understanding of the intertwined dynamics of two changing systems, the individual child during early development and the enlarging family.

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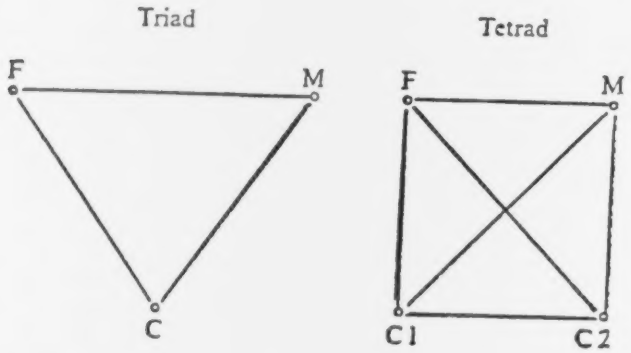
FIGURE 1:

Possible interactional constellations in a triad and in a tetrad

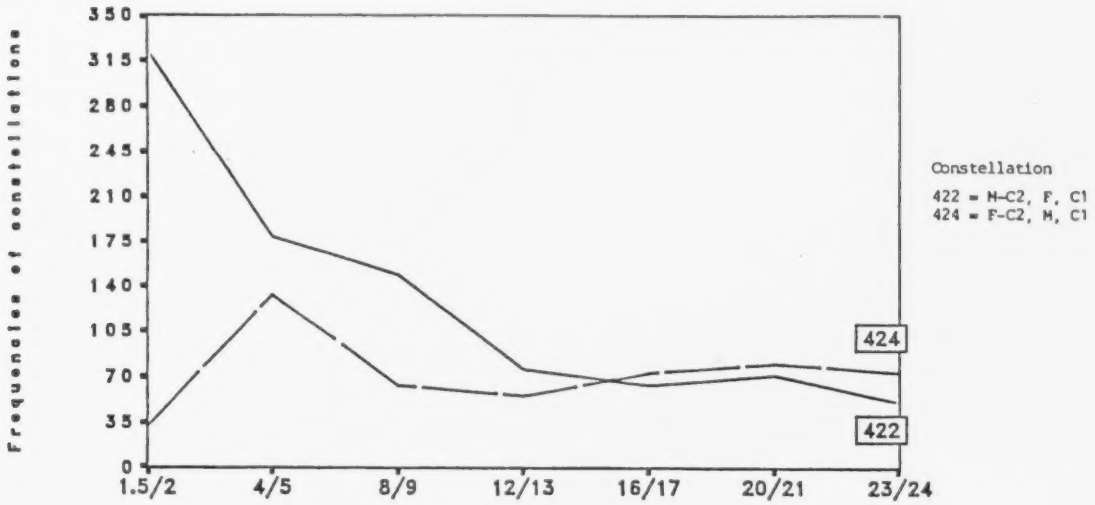


3 dyadic constellations
1 triadic constellation

6 dyadic constellations
4 triadic constellations
1 tetradic constellation

F = Father
M = Mother
C = Child

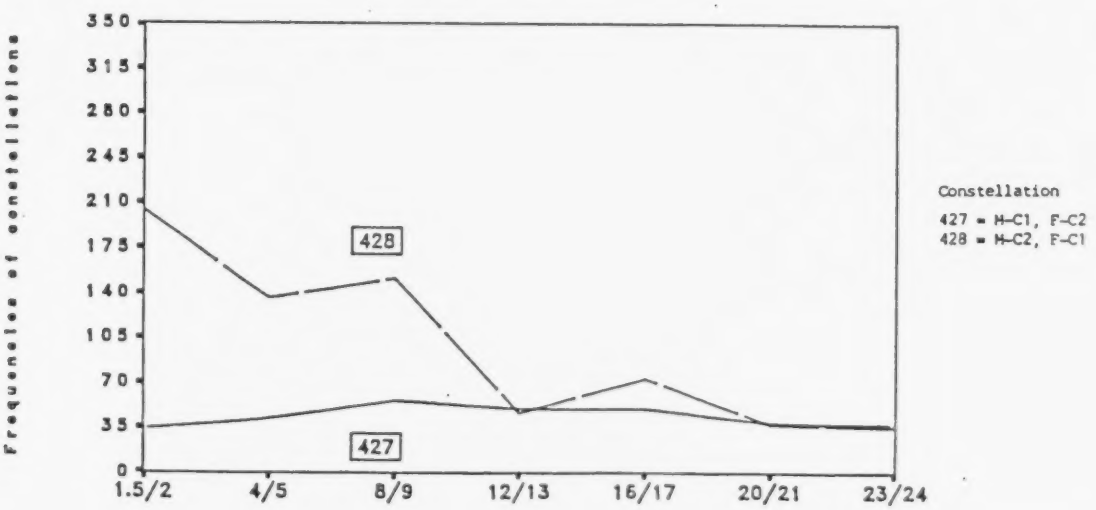
Family constellations over time (n=10)



Age of second child in months

Figure 2 : Family constellations 422 and 424

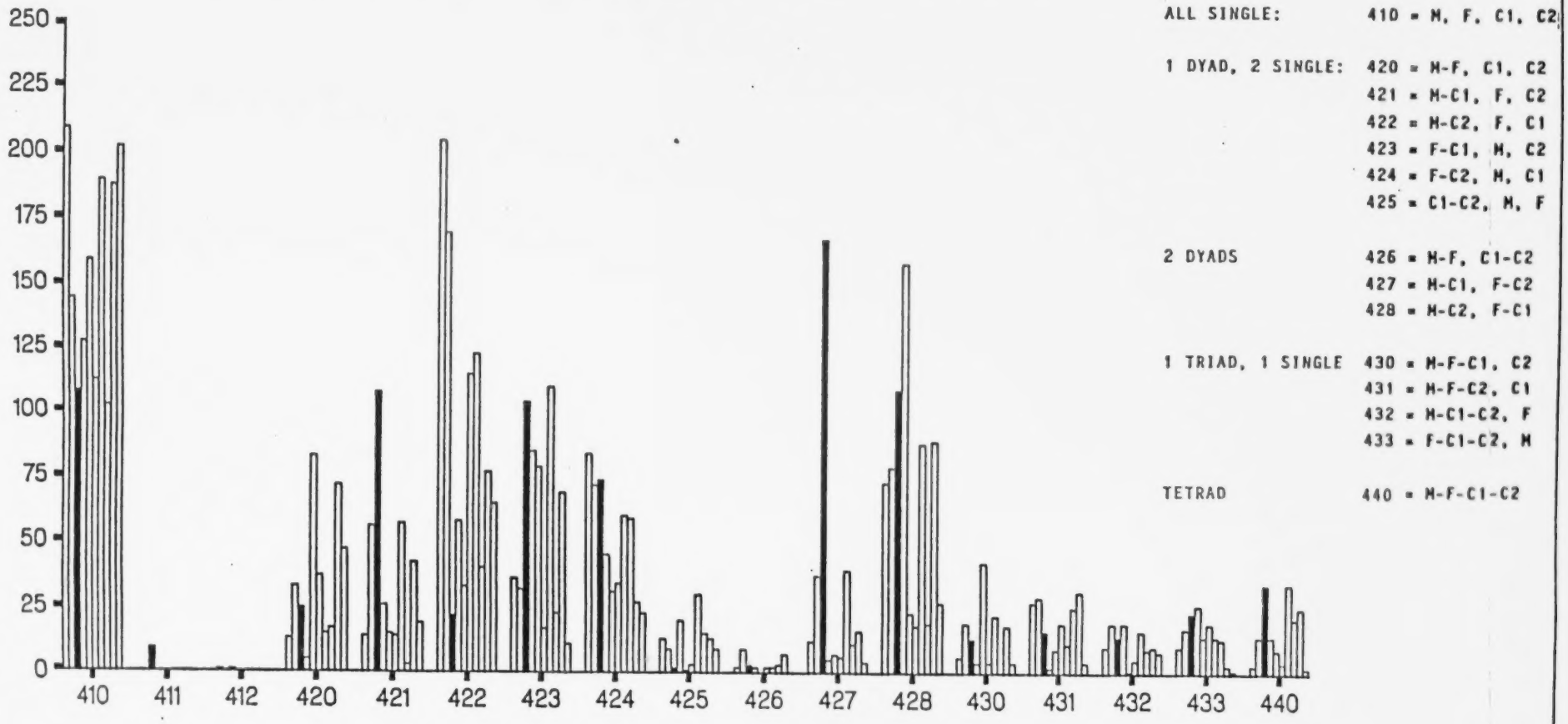
Family constellations over time (n=10)



Age of second child in months

Figure 3 : Family constellations 427 and 428

Figure 4
Family constellations



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Appendix

Episode Recurring patterns of family interaction concerning mother-child2 and mother-child1 interactions (Family M is preparing, conducting, and ending the ritual of bathing the children. Age of 2nd child: 16 days/period 1)

The family is in the nursery, M is undressing C1, F is with C2. C2 begins to whine while F is beginning to undress her.

C1: Ulla (C2) is crying!
M : (to C1) Ulla is crying. Well, you know. In the first place she is a little hungry, I suppose.
F : And she doesn't like to be undressed.
M : And in the second place she doesn't like to be undressed, you know. If one dresses and undresses her, she always cries. And later on, after the bath, she is going to cry even more! One should try to give her the pacifier.
F : Exactly
M : (to C1) You know

Family is in the bathroom. M is holding the baby in a small tub, F is standing beside her, bending over the front area of the main tub in which C1 takes her bath.

M : (to C2 who is lying quietly in the tub) Please, don't cry after the bath when you'll be dressed. It's so nerve-racking! (After a while) Hello! (M moves the baby softly back and forth in the water and wets her hair) Hair-wash!
F : (to C1) Look, Ulla's hair is being washed!
M : And she doesn't even cry.
F : (to C1, pointing to C2) Look, there!
C1: She still isn't crying.

After M has finished hair-wash and bathing the baby

M : (to C2) Now, you could stay a little longer, couldn't you? If we leave the tub, you are going to yell terribly, won't you? You are not crying here, so I better let you here until tomorrow morning.

F is turning from C1 to C2, and both parents are now looking at C2. C1 calls F back.

M : (to F) Would you please hold the towel? (for C2)

F holds towel into which C2 is going to be wrapped. M lifts C2 out of water, C2 begins to whine.

M : (to C2) You don't like to be taken out of the tub, do you?

Both M and F are wrapping C2 into the towel, M passes C2 to F.

M : (to F) Please take her over.

F leaves with C2 for the nursery, M turns to C1 who is still in the bathtub and begins a relaxed conversation with her.